

Displaying of GnRH Peptides on Bacteriophage T7 and Its Immunogenicity in Mice Model

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Abstract : T7 phage could be used as a perfect vector for peptides expression and haptens presentation. T7-3GnRH recombinant phage was constructed by inserting three copies of Gonadotrophin Releasing Hormone (GnRH) gene into the multiple cloning site of T7 Select 415-1b phage genome. The positive T7-3GnRH phage was selected by using polymerase chain reaction amplification, and the p10B-3GnRH fusion protein was verified by SDS-PAGE and Western-blotting assay. T7-3GnRH vaccine was made and immunized with 10^{10} pfu in 0.2 ml per dose in mice. Blood samples were collected at an interval in weeks, and anti-GnRH antibody and testosterone concentrations were detected by ELISA and radioimmunoassay, respectively. The results show that T7-3GnRH phage particles confer a high immunogenicity to the GnRH-derived epitope. Moreover, the T7-3GnRH vaccine induced higher level of anti-GnRH antibody than ImproVac[®]. However, the testosterone concentrations in both immunized groups were at a similar level, and the testis developments were significantly inhibited compared to controls. These findings demonstrated that the anti-GnRH antibody could neutralize the endogenous GnRH to down regulate testosterone level and limit testis development, highlighting the potential value of T7-3GnRH in the immunocastration vaccine research.

Keywords : Gonadotrophin Releasing Hormone (GnRH), Immunocastration, T7 phage, Phage vaccine

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